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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,180	09/30/2003	Toshio Tsujimoto	243214US0X	1265
22850	7590	10/17/2006		
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER SONG, MATTHEW J	
			ART UNIT 1722	PAPER NUMBER

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/673,180

Applicant(s)

TSUJIMOTO ET AL.

Examiner

Matthew J. Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-27 is/are pending in the application.
- 4a) Of the above claim(s) 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-23 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/27/2006 has been entered.

Response to Arguments

2. Applicant's arguments, see page 6 of the remarks, filed 7/27/2006, with respect to the 35 U.S.C 102 rejections have been fully considered and are persuasive. The rejections of claims 16-23 have been withdrawn. Applicant's amendment has overcome the prior art rejections in view of Schwertfeger and Loxley.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that

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the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 16 recites, “a silica glass substance comprising amorphous silica” in line 2. There is no support in the original disclosure for amorphous silica. The specification does not teach using amorphous silica.

5. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 16 recites, “where the layer comprising crystalline quartz does not include a crystallization promoter” in lines 3-4. There is no support in the original disclosure for a quartz layer which does not include a crystallization promoter. The specification merely teaches impurities are not intermixed with the quartz powder. The specification also teaches the presence of alkali metal impurities is less than 1 ppm. There is no support for a quartz layer which does not include a promoter, there is merely support for a quartz layer which includes less than 1 ppm of a promoter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 16-18, 20, 21, 23 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al (US 6,136,092).

Sato et al discloses a substrate 3 made of amorphous silicon dioxide (col 4, ln 50-60), this reads on applicant's amorphous silica. Sato et al also teaches a powder 6 is deposited on the substrate to form a transparent quartz glass inner layer 4 (col 2, ln 55-65 and col 5, ln 60 to col 6, ln 65), this reads on applicant's crystalline quartz because quartz is crystallized silica. Sato et al does not teach the use of crystallization promoters, therefore reads on applicant's layer of comprising crystalline quartz does not include a crystallization promoter.

Referring to claim 17, Sato et al discloses the inner layer has a small bubble content (col 6, ln 5-15). The bubble in the inner layer reads on applicant's porous.

Referring to claim 18, Sato et al discloses a quartz layer. Sato et al does not teach the claimed method of producing the product. The patentability determination of a product-by-process claim is based on the patentability of the product and does not depend on its method of production (MPEP 2113).

Referring to claim 20, Sato et al discloses a quartz crucible (col 6, ln 15-65).

Referring to claims 21 and 27, Sato et al discloses an inner layer of quartz, this reads on applicant's crystallized quartz.

Referring to claim 23, Sato et al does not disclose a ring configuration. However, this feature is inherent because crucibles are round in shape; therefore forming a crystallization layer on a round body will necessarily form a ring shape.

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8. Claims 16-18, 20-23 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al (JP 10-203893), an English Abstract and Computer Translation (CT) have been provided.

In a method of forming a strong quartz crucible, Abe et al discloses a crucible main body 11 formed of amorphous quartz glass, this reads on applicant's silica glass substance comprising amorphous silica, and forming a crystallized glass layer 12 on the whole outer surface of the main body (Abstract and Fig 1), this reads on applicant's layer comprising crystalline quartz on the silica glass. Abe et al is silent to adding crystallization promoter, this reads on applicant's layer comprising crystalline quartz does not include a crystallization promoter.

Referring to claim 17, Abe et al discloses a discontinuous crystallized layer (Fig 5), this reads on applicant's porous.

Referring to claim 18, Abe et al discloses a quartz layer. Abe et al does not teach the claimed method of producing the product. The patentability determination of a product-by-process claim is based on the patentability of the product and does not depend on its method of production (MPEP 2113).

Referring to claim 20-22, Abe et al discloses a crucible and forming a crystallized layer on the inner and outer surfaces (Abstract and Fig 1).

Referring to claim 23, Abe et al does not disclose a ring configuration. However, this feature is inherent because crucibles are round in shape; therefore forming a crystallization layer on a round body will necessarily form a ring shape.

Referring to claim 27, Abe et al discloses crystallized quartz.

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9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 6,136,092) or Abe et al (JP 10-203893), an English Abstract and Computer Translation (CT) have been provided, as applied to claims 16-18 above, and further in view of Loxley et al (US 5,389,582).

Sato et al or Abe et al teaches all of the limitations of claim 19, as discussed previously, except the claimed particle size of the silica powder.

In a method of forming quartz crucible using quartz powders, note entire reference, Loxley et al teaches using micronized particles of less than 10 microns of silica to produce reliable CZ crucibles of transparent bubble-free quartz glass which can readily be converted to cristobalite. (col 3, ln 1-65). It would have been obvious to a person of ordinary skill in the art at

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the time of the invention to modify Sato et al or Abe et al by using a silica powder consisting entirely of silica particles of less than 10 microns, as taught by Loxley ('582), to produce reliable and useful CZ crucibles of transparent bubble-free quartz glass.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 6,136,092), as applied to claims 16-18, 20, 21, 23 and 27 above, and further in view of Abe et al (JP 10-203893), an English Abstract and Computer Translation (CT) have been provided.

Sato et al teaches all of the limitations of claim 22, as discussed previously, except the layer comprising crystalline quartz is on at least part of the outside surface of the crucible.

In a method of forming a strong quartz glass crucible, Abe et al teaches forming a crystallized glass layer on the whole outer surface of the crucible main body to prevent deformation during silicon single crystal growth (Abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Sato et al by forming the crystalline quartz layer on the outside surface to reinforce the crucible to prevent deformation during silicon single crystal growth.

Response to Arguments

12. Applicant's arguments with respect to claims 16-23 and 27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song
Examiner
Art Unit 1722

MJS
October 12, 2006


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